In the Claims:

1. (currently amended) A method for detecting the change of an angular inclination of a scanning device with respect to a linear measuring direction of at least one linear scale of a linear position measuring system, the method comprises:

detecting several angular inclinations of said scanning device in relation to said linear measuring direction of said at least one linear scale by detecting position measurements of said scanning device at several scanning points; and

determining a value for a chronological progression of a change in angular inclinations of said scanning device from said detected several angular inclinations of said scanning device.

2. (previously presented) The method in accordance with claim 1, wherein said value of said chronological progression is determined as extreme values of said detected angular inclinations within a period of time.

3. (previously presented) The method in accordance with claim 1, wherein said value of said chronological progression is an oscillation range of said angular inclinations-formed from extreme values of said detected angular inclinations.

4. (previously presented) The method in accordance with claim 1, further comprising:

a) simultaneously detecting a first measured position value of said scanning device at a first scanning point and detecting a second measured position value of said scanning device at a second scanning point;

b) forming differential values between the simultaneously detected first and second measured position values at both said first scanning point and said second scanning point;

c) performing several repetitions of steps a) and b) to form several differential values; and

d) forming an oscillation range as a value of said chronological progression of change in said angular inclinations of said scanning device from several successive differential values formed in step c).

5. (previously presented) The method in accordance with claim 2, further comprising:

a) simultaneously detecting a first measured position value of said scanning device at a first scanning point and detecting a second measured position value of said scanning device at a second scanning point;

b) forming differential values between the simultaneously detected first and second measured position values at both said first scanning point and said second scanning point;

c) performing several repetitions of steps a) and b) to form several differential values; and

d) forming an oscillation range as a value of said chronological progression of change in said angular inclinations of said scanning device from several successive differential values formed in step c).

6. (previously presented) The method in accordance with claim 3, further comprising:

a) simultaneously detecting a first measured position value of said scanning device at a first scanning point and detecting a second measured position value of said scanning

device at a second scanning point;

b) forming differential values between the simultaneously detected first and second measured position values at both said first scanning point and said second scanning point;

c) performing several repetitions of steps a) and b) to form several differential values; and

d) forming an oscillation range as a value of said chronological progression of change in said angular inclinations of said scanning device from several successive differential values formed in step c).

7. (original) The method in accordance with claim 4, further comprising determining a minimum differential value and a maximum differential value from several successive differential values; and

forming a difference between said minimum and maximum differential values that corresponds to said oscillation range.

8. (original) The method in accordance with claim 7, further comprising storing said minimum differential value and said maximum differential value from several successive differential values.

9. (original) The method in accordance with claim 2, further comprising creating a warning signal when said oscillation range exceeds a predetermined value.

10. (original) The method in accordance with claim 3, further comprising creating a warning signal when said oscillation range exceeds a predetermined value.

11. (original) The method in accordance with claim 4, further comprising finding successive extreme values in said differential values and determining a time between the detection of said successive extreme values.

12. (original) The method in accordance with claim 11, wherein an oscillation frequency of said scanning device in relation to said scale is determined from said determined time between the detection of said successive extreme values.

13. (original) The method in accordance with claim 12, wherein said successive extreme values are each maximum values.

14. (original) The method in accordance with claim 12, wherein said successive extreme values are each minimum values.

15. (original) The method in accordance with claim 12, wherein said successive extreme values are a maximum value and a minimum value.

16. (currently amended) A linear position measuring system comprising:

at least one linear scale;

a scanning device that moves relative to said at least one linear scale along a linear

measuring direction; and

an evaluation module comprising:

a first module for determining angular inclinations of said scanning device with respect to said linear measuring direction from several measured position values; and

a second module for determining a value for a chronological progression of several angular inclinations.

17. (previously presented) The position measuring system in accordance with claim 16, wherein said second module comprises a memory device, in which extreme values from several successive angular inclinations are stored.

18. (currently amended) The position measuring system in accordance with claim 16, wherein said scanning device comprises at least two scanning points for scanning said at least one linear scale and for forming measured position values, and wherein said measured position values are provided to said evaluation unit, which processes said measured position values in such a way that a value for said chronological progression of said angular inclinations is present at an output of said evaluation unit.

19. (currently amended) The position measuring system in accordance with claim 17, wherein said scanning device comprises at least two scanning points for scanning said at least one linear scale and for forming measured position values, and wherein said measured position values are provided to said evaluation unit, which processes said measured position values in such a way that a value for said chronological progression of said angular positions is present at an output of

said evaluation unit.

20. (original) The position measuring system in accordance with claim 18, wherein said evaluation unit is integrated into said scanning device.

21. (currently amended) The position measuring system in accordance with claim 18, wherein said at least one linear scale comprises two graduated tracks, which are spaced apart from each other transversely to said measuring direction, and respectively one of said scanning points is assigned to one of said two graduated tracks.

22. (currently amended) The position measuring system in accordance with claim 18, wherein said at least one linear scale comprises a first linear scale that is arranged parallel with a second linear scale on a first machine element, and said at least two scanning points are arranged on a second machine element, wherein said first and second machine elements form a gantry structure.

23. (original) The position measuring system in accordance with claim 16, wherein said first module and said second module are formed in a common component.